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LORD RAYLEIGH.

1842-1919.

The death of John William Strutt, third Baron Rayleigh, closes the roll of the Victorian mathematical physicists. Descended from a family that settled in Terling Place in the late years of the eighteenth century, his life was a serene and successful one. He had no obstacles or difficulties in the way of a career to overcome, but the family motto, *Tenax propositi*, finds fit expression in the tenacious, ordered effort of his life.

John William Strutt was born at Langford Green in Essex on the 12th of November, 1842, and went to Trinity, Cambridge, in 1861. He was Senior Wrangler, Smith's prizeman, and was elected Fellow of Trinity in 1866. The next landmark in his life was 1873, when he was chosen a Fellow of the Royal Society and succeeded to the barony. In 1879, when on the death of Clerk Maxwell the Chair of Experimental Physics fell vacant, he was elected to the position, which carried with it the directorship of the Cavendish laboratory, which he held for five years. Though busy with his own scientific pursuits, Lord Rayleigh set himself to develop its possibilities for students, and organized a system of invaluable practical teaching in experimental physics. The great increase in the popularity of the Natural Science Tripos at Cambridge is in no small measure due to his efforts. In 1884, he was President of the British Association, and in 1887 he succeeded Tyndall as Professor of Natural Philosophy at the Royal Institution, a position he held until he was made President of the Royal Society in 1905. A year later he became Chancellor of the University of Cambridge. His honors were many, and among them he received the Order of Merit, and the Nobel Prize for Physics. He died on the 30th of June, 1919.

Apart from his necessary activities as a landowner—he was a purveyor of milk to London and an enlightened agriculturist—he is chiefly known to the world as the discoverer of argon. That discovery does not exhaust the sum of his contributions to science, which may be measured by the five volumes of his collected papers (1869-1910), printed by the Cambridge University Press, and bearing the motto: "The works of the Lord are great, sought out by all that have pleasure therein." These papers—three hundred and forty-nine in all—fall into three main divisions, on sound, on optics.

and experiments to determine certain fundamental physical constants. Among these are scattered lighter efforts, *parerga* such as a paper on pinhole photography, on "Mr. Venn's Explanation of a Gambling Paradox," and "Insects and the Colours of Flowers" (Vol. I, pp. 336 and 222). In 1871 he published an important series of papers on optical questions, including the theory of the scattering of light by small particles, and its application to explain the blueness of the sky. He found time to determine, by means of exact and patient experiment, certain fundamental quantities in electric measurement, the value of the ohm, the electromotive force of the Clerk standard cell.

In his address to the mathematical and physical section of the British Association in 1882, he had affirmed his conviction that the time had come for the redetermination of the density of the principal gaseous elements, and said that he had already made some preparation for this work, which occupied him for more than a decade after he had left the Chair of Physics at Cambridge in 1884. Having obtained satisfactory values for oxygen and hydrogen, he turned to nitrogen, and discovered certain baffling discrepancies in a given volume of nitrogen extracted from the air, as compared with the same volume obtained by chemical means from nitrogen-containing compounds. He was led to the conclusion that nitrogen extracted from the atmosphere was contaminated with an unknown, inert, heavier element, which he named argon. This valuable and most widely known of his discoveries witnesses to his meticulous accuracy and perseverance. His scientific work never blazed into a single flare of notoriety; and though useful, it never reached a great commercial success. He was not a great inventor, but he increased the range of fog-horns. His work is characterized by finish, skill, competency, even elegance, *style*, in fact. Much of it was critical in essence, and consisted in the filling in of gaps or the removing of obstacles in other men's investigations, the labor of the file, the final process of polish to theories roughed out by others. He has been truly said to be rather a critic than a creator, and a man with a lesser share of scientific imagination than the two great Victorians, Kelvin and Maxwell.